What is claimed is:

1. An apparatus for evaluating semiconductor material, comprising:

a pump laser configured to irradiate a pump beam modulated at a modulation frequency on a semiconductor wafer;

a probe laser configured to irradiate a probe beam on the semiconductor wafer; and

a detector configured to detect a reflection of the probe beam from the semiconductor wafer.

2. The apparatus of claim 1, further comprising a lock-in amplifier configured to amplify the reflection in synchronization with the modulation frequency.

3. The apparatus of claim 1, further comprising a second laser configured to irradiate a second pump beam on a second semiconductor wafer.

4. The apparatus of claim 1, further comprising a reflector arranged in an optical path of the probe beam and having a reflectance equivalent to a surface reflectance of the semiconductor wafer.

5. A method for evaluating semiconductor material, comprising:

reducing charge trapped in a surface of a semiconductor wafer;

implanting ions in the semiconductor wafer; and

while irradiating a probe beam and a modulated pump beam on the semiconductor wafer, measuring an intensity of a reflection of the probe beam from the semiconductor wafer.

6. The method of claim 5, wherein the reducing charge comprises terminating crystal defects in the semiconductor wafer with hydrogen atoms.

7. The method of claim 5, wherein the reducing charge comprises exposing the surface of the semiconductor wafer to a dilute hydrofluoric acid solution.

8. The method of claim 5, further comprising forming an insulating film on the surface of the semiconductor wafer after the reducing charge and before the implanting ions.

9. A method for evaluating semiconductor material, comprising:

implanting ions in a semiconductor wafer placed on a wheel of a mechanical scan type ion implanter in a direction substantially parallel to a rotation axis of the wheel; and

while irradiating a probe beam and a modulated pump beam on the semiconductor wafer, measuring an intensity of a reflection of the probe beam from the semiconductor wafer.

10. The method of claim 9, further comprising, when the mechanical

scan type ion implanter structurally allows no ions to be implanted in a direction substantially parallel to the rotation axis, reducing an angle between the rotation axis and an ion implanting direction to be as small as the mechanical scan type ion implanter structurally allows.

11. A method for evaluating semiconductor material, comprising:

irradiating a pump beam modulated at a modulation frequency on a semiconductor wafer;

irradiating a probe beam on the semiconductor wafer; and

after irradiating the pump beam on the semiconductor wafer for at least three seconds, measuring an intensity of a reflection of the probe beam from the semiconductor wafer while irradiating the pump beam and probe beam on the semiconductor wafer.

12. A method for evaluating semiconductor material, comprising:

irradiating a pump beam modulated at a modulation frequency on a semiconductor wafer;

irradiating a probe beam on the semiconductor wafer;

measuring an intensity of a reflection of the probe beam from the semiconductor wafer while irradiating the pump beam and probe beam on the semiconductor wafer; and

generating a beam equivalent to the reflection in the same optical path as that of the reflection during a period in which no probe beam is being irradiated on the semiconductor wafer.

13. The method of claim 12, wherein the generating the beam equivalent to the reflection comprises irradiating the probe beam on a reflector having a reflectance equivalent to a surface reflectance of the semiconductor wafer.

14. A method for evaluating semiconductor material, comprising:

irradiating a pump beam modulated at a modulation frequency on a semiconductor wafer;

irradiating a probe beam on the semiconductor wafer;

measuring an intensity of a reflection of the probe beam from the semiconductor wafer while irradiating the pump beam and probe beam on the semiconductor wafer;

finding a first functional form indicating a relation between a first elapsed time period from a time when ions were implanted into the semiconductor wafer to a time when the intensity of the reflection was measured and intensity changes of the reflection; and

finding an intensity of the reflection just after the ions were implanted into the semiconductor wafer according to the intensity of the reflection measured, the first elapsed time period, and the first functional form.

15. The method of claim 14, further comprising:

finding a second functional form indicating a relation between a second elapsed time period from a time when irradiation of the

probe beam on the semiconductor wafer was begun to the time when the intensity of the reflection was measured and intensity changes of the reflection; and

finding an intensity of the reflection just after irradiation of the probe beam on the semiconductor wafer was begun according to the second functional form, wherein

the finding an intensity of the reflection just after the ions were implanted into the semiconductor wafer, is carried out according to the intensity of the reflection just after irradiation of the probe beam on the semiconductor wafer was begun, the first elapsed time period, and the first functional form.

16. The method of claim 14, wherein the first functional form is expressed by adding up a plurality of terms including a logarithm of the first elapsed time period.

17. The method of claim 15, wherein the second functional form is expressed by adding up a plurality of terms including a logarithm of the second elapsed time period.

18. A method for evaluating semiconductor material, comprising:

implanting ions in a semiconductor wafer;

while irradiating a probe beam and a pump beam modulated at a modulation frequency on the semiconductor wafer, measuring an intensity of a reflection of the probe beam from the semiconductor

wafer;

selectively extracting a double frequency component having a frequency being twice as large as the modulation frequency from the intensity of the reflection;

measuring a phase shift between the double frequency component and a reference modulation component; and

determining whether or not a topmost surface of the semiconductor wafer involves an amorphous state according to the phase shift measured.

19. A method for evaluating semiconductor material, comprising:

implanting ions in a semiconductor wafer;

while irradiating a probe beam and a pump beam modulated at a modulation frequency on the semiconductor wafer, measuring an intensity of a reflection of the probe beam from the semiconductor wafer;

measuring a distribution of the intensity over a surface of the semiconductor wafer; and

determining whether or not a topmost surface of the semiconductor wafer involves an amorphous state according to the distribution.